RESEARCH DETAIL

DRONES INTELLIGENT PARKING MANAGEMENT SYSTEM

A parking management platform using drone cruising paired with deep learning

PROJECT OVERVIEW

- **This project details the design, implementation and improvement of a UAV-based intelligent parking management system, including key technologies and experimental validation, demonstrating the system's potential for improving parking management efficiency and robustness.A series of application scenarios and development tasks were also set up. The key modules and core technologies in the system are explained in detail.**

PROJECT BACKGROUND

- With the increase in the number of vehicles, the search for parking spaces is causing trouble for users, therefore, combining the advantages of intelligent processing brought by drones and deep learning can bring convenience to users in parking.

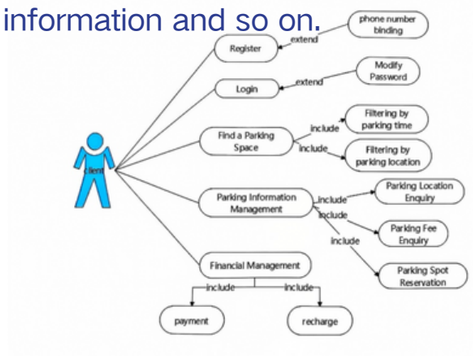
PROBLEM TO SOLVE

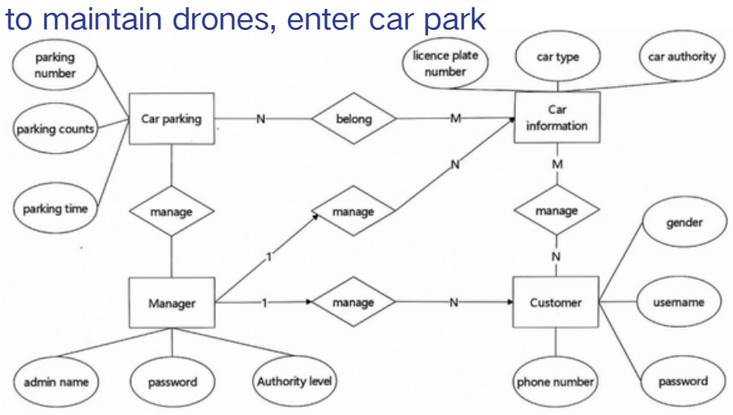
- With this system, users can easily find parking spaces and navigate to the destination for parking with a single click, which saves time in searching for an empty space and avoids congestion due to wayfinding.

SOLUTION APPROACH

SYSTEM ANALYSIS

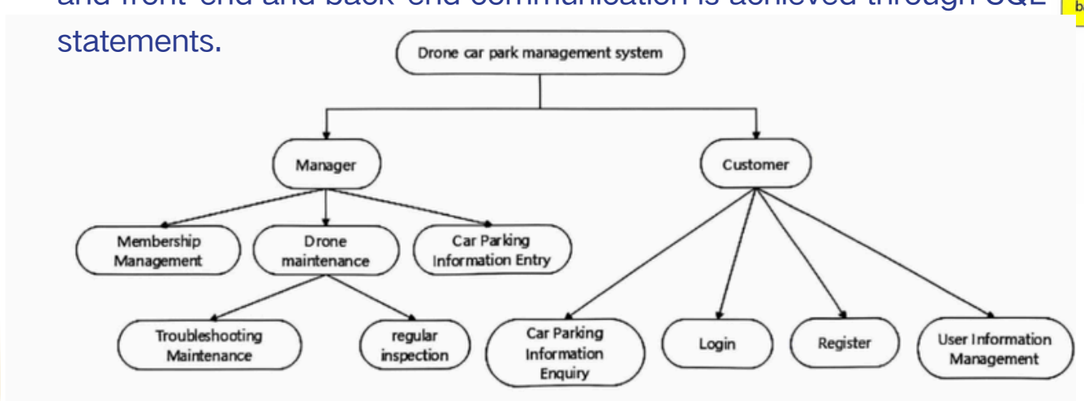
- Based on the software engineering theory, the requirements and architecture of the system are comprehensively described. The system is divided into two parts, members and administrators. Members need to manage personal information, login and register and other functions, and administrators need to maintain drones, enter car park information and so on.





FUNCTIONAL DESIGN

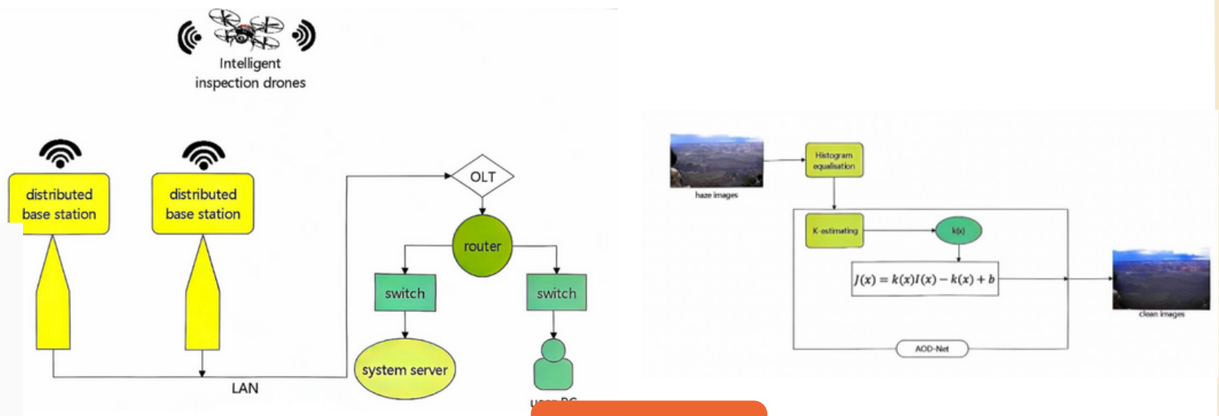
- The system functional structure diagram, the E-R relationship diagram of the database and the database table field design are shown. Database operations are separated from system operations, and front-end and back-end communication is achieved through SQL statements.



MODELING

- UAV cruise and signal transmission module, de-fogging algorithm implementation and validation, parking information recognition and data entry
- Parking Lot Space Modeling using database and modelling algorithms

MAIN MODULES

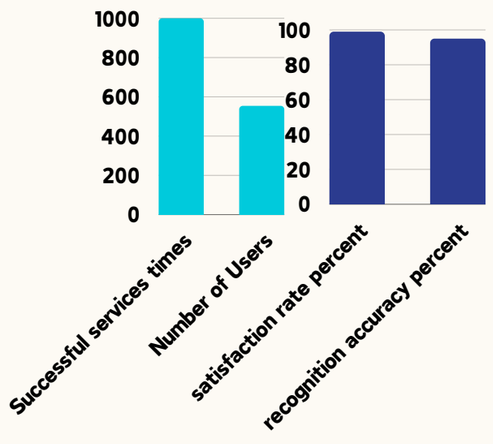


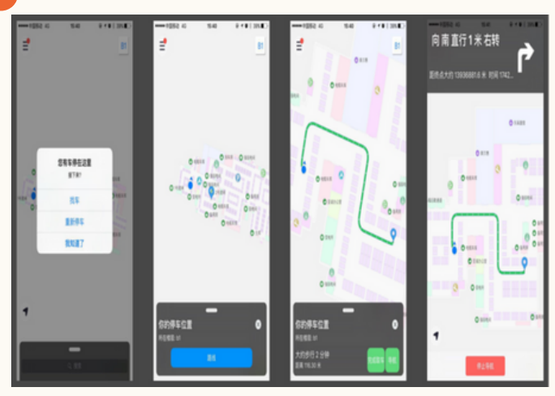
CITATION

1.R. Varghese and S. M., "YOLOv8: A Novel Object Detection Algorithm with Enhanced Performance and Robustness," 2024 International Conference on Advances in Data Engineering and Intelligent Computing Systems (ADICS), Chennai, India, 2024, pp. 1-6

2.Zherzdev S, Gruzdev A. LPRNet: License Plate Recognition via Deep Neural Networks[J]. arXiv preprint arXiv:1806.10447, 2018. [^11^]

PROJECT OUTCOMES





USER INTERFACE

CONCLUSION

The project proposes new application scenarios for intelligent management of UAS and analyses the system in detail. Although the space of the article is limited, there is still room for improvement of the system, such as the security of users' private data and system signal transmission, automatic parking guidance and intelligent interactive services, which may become the key development trend and research difficulties in the field of this system.

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